Helicopter Association International

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October 30, 1997

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Federal Communications Commission
Dockets No. ~~FCC 97-182, & No. 97-296~~ Docket #97-182
Attn: FCC Dockets Branch (Room 239)
1919 M Street, NW
Washington, DC 20554

Re: *Comment to Docket No. 97-296: "Preemption of State and Local Zoning and Land Use Restrictions on the Siting, Placement and Construction of Broadcast Transmission Facilities, September 2, 1997"*

Helicopter Association International ("HAI") submits this Comment to FCC Docket No. 97-296 entitled, *Preemption of State and Local Zoning and Land Use Restrictions on the Siting, Placement and Construction of Broadcast Transmission Facilities* published at 62 Fed. Reg. 46241 on September 2, 1997, hereinafter the "NPRM."

HAI is the professional trade association for the civil helicopter industry. Its 1,400-plus member organizations in more than 70 nations safely operate more than 4,000 helicopters approximately 2 million hours each year. HAI is dedicated to the promotion of the helicopter as a safe, effective method of transportation and to the advancement of the civil helicopter industry. HAI's core value is aviation safety. As such, its leadership and members commit to flying to the highest industry standards and maintaining the level of those standards.

Consequently, HAI categorically opposes the referenced NPRM because it would inject significant and wholly unnecessary threats into all sectors of U.S. aviation, and helicopter operations in particular. While HAI does not oppose the introduction of digital television (DTV) nor its broadcast towers, HAI does insist that they must be constructed in a publically responsible manner that holds aviation safety as the foremost consideration. HAI further asserts that local zoning authorities across the nation possess the greatest knowledge and capacity for proper judgement as regards the siting and marking of these towers. HAI insists that the NPRM be withdrawn; justification is as follows:

While the NPRM poses substantial threats to all sectors of the aviation industry, it poses uniquely egregious safety threats to the civil helicopter industry.

Helicopters are uniquely capable machines. Whether by transporting passengers, lifting objects to an otherwise unreachable precipice, observing traffic, fighting fires, lifting logs from environmentally sensitive forests, hovering to assist law enforcement or rescue operations, or

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descending vertically to transport injured or critically ill patients to, helicopters have an irreplaceable role in serving the public good. In accomplishing these one-of-a-kind missions, helicopters fly low-level flights, fly in adverse weather conditions, fly at night, fly in obstacle-rich environments, and often fly with a great sense of urgency where time is of the essence and life hangs in the balance.

Pursuant to Federal Aviation Regulations, helicopters are required to operate at an altitude sufficiently high to accommodate safe landings in the event of an emergency. These regulations are based on their unique design capabilities. Helicopters typically fly at altitudes ranging from 500' above ground level (AGL) to 1,500' AGL. From this description of standard helicopter operations, it is easy to recognize that all 1,600 DTV towers proposed by this NPRM are in the potential flight paths of helicopters. Additionally, the 50,000 towers serving the Personal Communication Device (cell phones and pagers) industry, will exceed 200' AGL. They will jeopardize aviation safety if prudent consideration is not given to properly site and mark them, and place them on aviation charts in a timely fashion. These facts support HAI's position that local zoning authority must not be diminished so they may appropriately weigh all aviation and safety considerations wrought by a proposed tower.

A California Department of Transportation task force report[1] provides information that gives reasonable persons cause to believe that nearly all towers pose some erosion of aviation safety. While the report focuses on wire strikes, it is the closest study of its kind that relates to the present subject. The report reveals seven findings pertinent to this NPRM:

- Location, rather than height, is the biggest factor;
- More than 90% of all wire strikes occur below 200' AGL;
- More than 70% of all wire strikes occur at or below 100' AGL;
- Bad weather is rarely a factor. About 90% of all reported civil helicopter wire strikes occur when visibility is unlimited; 95% occur when visibility is equal to or greater than VFR requirements;
- About 70-80% of wire strikes occur during the day. Two-thirds (2/3) of the reported public service civil helicopter wire strikes occurred at night;

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[1] Report on Activities and Recommendations of the Wire Strike Prevention Task Force; Submitted to the California Department of Transportation, Aeronautics Program in compliance with Section 21506 of the State of California Public Utilities Code; January 10,1 996. See Attachment.

- For reported wire strikes, more than 31% of the wires struck were considered completely obscured, about 37% were partially obscured, and 31% were not obscured;

- Pilot experience is rarely a factor. About 60% of pilots involved have more than 1,000 hours of flight time.

As a frame of reference, the Washington Monument stands at 555' AGL; any structure 200' AGL or taller requires a Federal Aviation Administration (hereinafter "FAA") Obstacle Evaluation. Given the elements of the NPRM, these facts justify alarm for the aviation community, the flying public, and the public being overflown.

Authority exercised by local units of government must be preserved to assure that public safety is preserved.

Since the advent of the radio, local units of government have properly controlled the siting and marking of broadcast towers. No unit of government is more informed about the specific factors of a given region, nor is more sensitive to its regional constituencies than the local zoning authorities; they are comprised of elected officials (or their designees) from municipalities, townships, counties and states. No federal authority possesses the knowledge nor accountability to these regional constituencies as do these local entities. These entities are directly accountable for the safety of the local public as well as their constituents' investment in public infrastructure such as heliports and airports. Moreover, no governmental body is in a better position to balance the interests of competing industries such as the interests of broadcast industries in towers and the interest of the aviation industries in airports and heliports.

The premise of the whole Federal Communication Commission's (FCC) NPRM is that broadcast towers supporting DTV or personal communication devises (PCDs) must be constructed rapidly because it is essential to their success. This argument holds no merit.

Essentially identical broadcast tower construction has been taking place for seven decades. Many billions of dollars in foreign and domestic money have been invested in the industries supported by broadcast tower infrastructure; these are the industries that have petitioned the FCC for the aggressive and "rapid roll-out of DTV." Broadcast-industries investors (whether investing in DTV, telecommunications, radio-FM or AM, or in any other broadcast medium) are highly sophisticated and possess remarkable resources; they were eminently informed of the existing process of tower construction through state and local zoning authorities ***before*** they made their investments which are the focus of this NPRM. Because the proposal would both harm public safety and devalue even greater investments already made by federal and local governments in aviation infrastructure (heliports, airports, aircraft, air traffic control systems, and more), the petitioners request as stated in the NPRM should be summarily denied.

Under existing regulations, the FAA has no authority to halt unsafe construction, even when it impedes its paramount mission of aviation safety—only FCC has that authority. Because the telecommunication and DTV industry generate many billions of dollars of revenue to the federal government, thus justifying FCC budgets, there is an inherent conflict of interest operating when

FCC must decide between constructing a tower at even a marginally safe site or safeguarding aviation safety. As money and politics walk hand in hand, it is unwise and even unfair to the FCC, to ask that it jealously stand guard for aviation safety at the likely expense of impinging on sources of its financial support.

This NPRM eliminates the mechanism that can, and has for the past seven decades, successfully balanced those competing interests. It is hoped that the FCC does not view its role as preempting these decisions by local governments on a community-by-community basis. Rather, HAI urges FCC to sustain the local zoning authorities' rightful prerogative, at least as much as did the United States Congress in the *Telecommunications Act of 1996,*[2] (hereinafter the *Act*) which states:

> *"Except as provided in this paragraph, nothing in this Act shall limit or affect the authority of a State or local government or instrumentality thereof over decisions regarding the placement, construction, and modification of personal wireless service facilities."*

HAI challenges whether FCC has the authority to preempt or abridge local zoning officials' authority and jurisdiction over towers built for DTV.

Originally, the provisions of the *Telecommunications Act of 1996* only granted considerations for PCD-based towers to facilitate construction. Next, the DTV industry sought even greater special considerations, i.e. the preemption of local-governments' authority over zoning regulations, via the present NPRM. Believing that they may garner even greater favors than those granted by the *Act,* the PCD industry seeks to attach itself to the DTV petition. This concerted effort to seize airspace without regard to aviation safety, as set forth in the NPRM, is intolerable and HAI demands that it be denied.

Moreover, the different types of broadcast towers should not be linked. Where there are disputes between tower sponsors and local zoning authorities, the FCC should not seek to make judgements that are the rightful prerogative of the courts.

The colossal magnitude of this proposal will require substantially more time for affected parties to comment and HAI requests that the deadlines be extended from October 30, 1997 to January 30, 1998; and from December 1, 1997 to March 1, 1998 respectively.

Combining DTV and PCD towers in the NPRM involves a minimum of 51,600 towers, each one of which will exceed 200 feet above ground level (AGL). The DTV industry has stated that 1,600 towers (each one more than 1,000 feet AGL) are required for its purposes. The PCD industry has stated that it needs 100,000 towers constructed by 2002; 50,000 of which will exceed 200' AGL. The 200' AGL threshold triggers the requirement for tower sponsors to request

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[2] Section 332 (c) (47 U.S.C. 332 (c)

an Obstacle Evaluation (O/E)from the FAA. The FAA will be required to perform and/or approve 51,600 O/Es just to accommodate the towers referenced in this NPRM. Nevertheless, the FAA does not intend to submit comments on this fundamental threat which will undermine the its primary charter: to protect and advance aviation safety. This most unfortunate disconnection between the FAA and the united aviation industry will require time to resolve with its federal overseer. This magnitude further points to the virtually irrevocable and harmful effects of 51,600 penetrations into navigable airspace. If towers are not properly sited and marked as deemed appropriate by local zoning authorities and aviation authorities, these perforations in the world's safest air navigation system would drain the system of its remarkable safety and efficiency achievements.

Moreover, aviation safety is a paramount objective of this administration and Congress. The NPRM is therefore contrary to the goals articulated in the White House Commission on Aviation Safety and Security's *Final Report to President Clinton*, contrary to the Administration's goal to reduce aviation accidents by 80 percent by 2007, and it is clearly contrary to Congressional safety goals articulated in all of its aviation subcommittee reports in recent years.

The NPRM is solely focused on the economic harm (slow rate of return on investment) claimed to be suffered by DTV and PCD industries if they cannot erect their towers fast enough. By contrast, the aviation industries anticipate fatal and catastrophic injuries to citizens if the NPRM is made a final rule.

Policy makers must never lose sight of public safety as the preeminent objective of any exercise to properly evaluate new public policies. The fact that the broadcast industries are intensely desirous to erect their towers, combined with the need for a civilly elected body to decide the merits of such proposals, constitutes a natural but wholly necessary conflict. This conflict, however, is not without solution as set forth at the end of these comments. As for the broadcast and telecommunications industries impressive fortunes that they say are at risk, these impressive fortunes pale in comparison to the fortunes represented by all the public and private use heliports and airports constructed across the nation. Therefore, the taxpayers have a larger fortune at stake in this controversy.

HAI lists below the elements for achieving a successful consensus as regards the siting, construction and marking of towers:

1. Preserve local zoning authority to capitalize on their expertise of local factors bearing on the proper and safe placement of all towers under the auspice of the FCC.

2. Allow the time limits on local zoning authorities to act as stated in the NPRM provided that:
   a) A "day" is defined as a day that the local zoning authority is scheduled to

convene;[3]

b) Tower sponsors are required to submit an FAA-completed Obstacle Evaluation to the local zoning authority simultaneous with their filing an application to construct the tower;

3. The FAA be required to accommodate the speedy roll-out of thoroughly and professionally completed Obstacle Evaluations. The FAA should not, and need not, be burdened with the full volume of work involved in properly conducting 51,600 O/Es. This can and should be accomplished by the FAA using designated contractors to perform the work while the FAA retains its rightful authority to approve them. The wealth inherent in the broadcast community's investments, and the financial peril it references as justifying a speedy roll-out, make any nominal FAA-O/E approval fee a bargain if it expedites the tower construction process while preserving public safety and public investments in aviation infrastructure. Professional approach-development contractors have represented that they can conduct on-site inspections and complete O/E reports in as little as 1-3 days and that the FCC can evaluate them within 24 hours, given the proper software.

4. Establish a joint FCC/FAA rulemaking advisory committee and appropriate working group to include but not be limited to representatives from each segment of the broadcast community, each segment of the aviation community, the FCC and the FAA. All rules regarding the construction or modification of towers that will consequently reach or exceed 200' AGL or penetrate the *obstacle clearance plane* surrounding a public or private airport or heliport, should first be submitted to an advisory committee established under the authority of the *Federal Advisory Committee Act of 1972.* The FAA's Aviation Rulemaking Advisory Committee has been very successful since 1991 in forging consensus between regulators and the aviation industry and other parties for proposed rules that are particularly controversial or complex in nature. This provides a good example of what should be done as regards rules relating to erection of towers or other obstructions into navigable airspace.

In conclusion, the entire aviation industry focused on this issue is united in their opposition to this unsafe proposal. HAI reiterates its request for an extension of the two NPRM deadlines to January 30, 1998 and March 1, 1998 respectively. The fundamental changes in the way FCC proposes to do business, the FCC's inexcusable lack of participation in this discussion, Congressional and Executive interest in aviation safety, aviation industries' united voice on the threats to safe air navigation, and the proposed usurpation of local governance all combine to

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[3] Many local zoning authorities are in recess for periods of time much greater than the number of days allowed by the NPRM. Tower sponsors should plan accordingly and local zoning authorities must be willing to be flexible and accommodate new industries such as DTV and PCDs.

make this debate worthy of the additional time. It is hoped that the FCC and FAA will work together, include relevant industry representatives when doing so, and otherwise adopt HAI's solutions to achieving a win-win consensus that serves aviation safety and other public interests. For more information, or to arrange meetings to these ends, please contact me or Bill Wanamaker in HAI Government Affairs at (703) 683-4646. HAI is located at 1635 Prince Street; Alexandria, VA 22314. Our e-mail is: *frank.jensen@rotor.com* and *bill.wanamaker@rotor.com* respectively.

Sincerely,

Frank L. Jensen, Jr.
President

cc: HAI Board of Directors

Report on Activities and Recommendations of the Wire Strike Prevention Task Force

Submitted to the
California Department of Transportation, Aeronautics Program
in compliance with
Section 21506 of the State of California
Public Utilities Code

January 10, 1996

December 31, 1995

Mr. Marlin Beckwith

Program Manager, Aeronautics
California Department of Transportation
P. O. Box 942873
Sacramento, CA 94273-0001

Dear Mr. Beckwith:

California's largest electric utilities, in cooperation with the aviation community, have prepared the attached report in compliance with Section 21506 of the California Public Utilities Code. Our report describes the results of our two-year demonstration project where we evaluated criteria for marking selected overhead wires and supporting structures with a view towards improving aeronautical safety.

The report summarizes achievements resulting from efforts of the Wire Strike Prevention Task Force. The Task Force is comprised of representatives from these utilities and a diverse cross section of California's aviation community. The Task Force members endorsed the information included in this report at its meeting on September 13, 1995.

Section 21506 of the code specifically requires the utilities to report on the results of our efforts to evaluate wire marking criteria; however, as Section 21504 notes, early work by the Task Force found that pilot education of wire hazards and selective marking are equally important to improving the safety of low-level flight throughout the state. Therefore, we have included a section in the report which describes efforts to enhance pilot education and awareness through materials that were developed and distributed with the state's aviation community.

Sincerely,

Luther M. Dow
Co-Chairman
Wire Strike Prevention Task Force

A. L. Grant
Co-Chairman
Wire Strike Prevention Task Force

Attachments
cc: Wire Strike Prevention Task Force

96WSPTF

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Attachments

Association (AOPA), the Helicopter Association International (HAI) and other parties, voluntarily convened in 1992 to develop and recommend a comprehensive program to improve low-level flight safety in California. This group became known as the Wire Strike Prevention Task Force. The Flight Safety Institute (FSI) of Sacramento, California acted as consultant for this project.

Attachment II lists the members of the Wire Strike Prevention Task Force.

C. Flight Safety Institute Study

To help formulate effective policies and strategies for reducing aircraft wirestrikes in California, FSI reported on their study, commissioned by PG&E, that investigated the frequency of low-level aircraft wire strikes and the conditions under which they occurred. While the FSI study focused on data collected from helicopter wire strikes, studies by the FAA, NASA and other organizations reveal that wire strikes by fixed-wing aircraft occur under similar conditions as those by helicopters.

In summary, the FSI study found that most aircraft wire strikes occur under the following conditions:

- less than 200 feet above ground level (AGL)
- in clear or scattered cloud sky conditions
- during daylight hours
- in aircraft flown by experienced pilots flying under visual flight rules

The FSI study is presented as ***Attachment III*** to this report.

D. Formation of Work Groups

Based on the findings of the FSI study and the experience of the aviation members, the Wire Strike Prevention Task Force formed two work groups charged with making recommendations to improve low-level flight safety in California.

II. PILOT EDUCATION AND AWARENESS

A. Pilot Education Materials

AB1017 involved the California utilities with more than 250,000 customers. These utilities, PG&E, SCE, SDG&E, LADWP and SMUD, committed $100,000 for the creation and dissemination of pilot education materials. The Pilot Education Work Group developed flight safety materials to increase pilot awareness of low level flight hazards.

These materials include:

1) "The Terrible Truth About Wire Strikes" - a 13-minute videotape which outlines the hazards of low-level flying.

2) A Pilot's Guide to Avoiding Wire Strikes - a 15-page pamphlet that provides basic information about recognizing and avoiding potential wire hazards. The booklet also includes a list of utilities' phone numbers to request wire strike risk assessments.

3) Posters that graphically communicate the hazards associated with low-level flight, which are currently being developed for distribution to airports.

Attachment VI describes the distribution of pilot education materials by CAP in compliance with PUC section 21505.

B. Pilot Awareness

Numerous articles have been published in various aviation magazines, newsletters, etc. For example:

Article Title	Date	Publication
"Wire Strike Avoidance Program"	Summer, 1995	California Aviation News
"Wire Strike Avoidance"	April, 1995	The Main Rotor
"Wire Strike Prevention"	August, 1994	California Pilot
"Wire Strike Avoidance Program"	Winter, 1993	California Aviation News
"Wire Strike Avoidance Program"	December, 1993	California Pilot
"Major Breakthrough in Wire Strike Prevention Program"	March, 1993	Rotor Magazine

mountains, lakes, rivers, freeways, and may have been located near airstrips. During the initial criteria testing period, pilots, engineers, FAA and CAP reached consensus on whether wires should be marked in over fifty percent of the evaluations. Based on evaluations of 85 sites, the criteria was further modified to improve consistency and repeatability.

hazards and those requested by the general public. The wires included transmission and distribution lines in a variety of terrains, similar to those evaluated during the pre-test period.

To date, evaluations have been completed on 327 sites and are currently in progress for 25 sites. ***Attachment VII*** shows Total Wire Evaluations performed by utilities.

The results of the completed evaluations initially showed that 107 sites were considered to be high risk, 13 were considered to be medium risk and 207 were considered to be low risk.

PUC, Section 21506 (e) defines a methodology for a requestor to appeal to CAP any utility decision that a line should not be marked. ***Attachment VIII*** describes the methodology for initiating and appealing decisions on wire marking.

Under the process for medium-risk review, CAP evaluated thirteen sites. The utilities adopted CAP's recommendations by moving five of these sites into the high risk category and eight sites into the low-risk category.

In addition, CAP evaluated one site as a result of the appeals process. The CAP recommendation concurred with the utilities' original decision to not mark.

V. RECOMMENDATIONS

The Wire Strike Prevention Task Force recommends the following:

1) The participating utilities continue to use the criteria in conjunction with CAP to evaluate elevated wires and supporting structures beyond December 31, 1995, when Section 21506 of the Public Utilities Code sunsets.

2) The participating utilities, in conjunction with CAP create a formal Memorandum of Understanding that outlines the continuing relationship among the parties regarding wire marking.

3) Encourages the expansion of the Wire Strike Avoidance Program to other utilities and the aviation community in the US.

Division 9

AVIATION

Division 9 was added by Stats.1953, c. 151, p. 927, § 1.

Administrative Code References

Civil aviation, regional information distribution programs, see 49 App. U.S.C.A. § 1346a.
Federal aviation program; definitions, policies, powers, reports, see 49 App. U.S.C.A. § 1301 et seq.

Part 1

STATE AERONAUTICS ACT

Part 1 was added by Stats.1953, c. 151, p. 927, § 1.

The heading of Part 1, State Aeronautics Commission Act, was amended by Stats.1961, c. 2071, p. 4312, § 1, to read as it now appears.

cation and awareness program and to evaluate the criteria for marking selected wires and supporting structures in the field.

(Added by Stats.1993, c. 1009 (A.B.1017), § 1.)

Historical and Statutory Notes

Former § 21504, which related to aircraft rescue transmitters, was added by Stats.1969, c. 1460, § 1, amended by Stats.1970, c. 1417, § 2, and repealed by Stats.1972, c. 474, § 1.

§ 21505. Information coordination and dissemination regarding wire strike hazards; electrical utility fee

(a) The Division of Aeronautics, in cooperation with the aviation industry and the electric utility industry and in consultation with the Federal Aviation Administration, shall coordinate and disseminate information provided by the working group to pilots to increase awareness of wire hazards and to communicate techniques for identifying and avoiding wires.

(b) For purposes of coordinating and disseminating the information provided to the division by the working group pursuant to subdivision (a), every electrical corporation and publicly owned electrical utility in this state which serves 250,000 or more customers shall pay a one-time fee in a sufficient amount so that the total of all fees collected does not exceed one hundred thousand dollars ($100,000). The fee shall be in the proportion that each utility's total miles of transmission line greater than 110 kilovolts bears to the total miles of transmission line greater than 110 kilovolts statewide.

(c) All fees collected pursuant to subdivision (b) shall be deposited in the Aeronautics Account in the State Transportation Fund to be continuously appropriated to the Department of Transportation for the purposes set forth in subdivision (a).

(Added by Stats.1993, c. 1009 (A.B.1017), § 1.)

Historical and Statutory Notes

Former § 21505, which related to aircraft rescue transmitters, was added by Stats.1969, c. 1460, § 1, and repealed by Stats.1972, c. 474, § 1.

only part that expires Dec. 31, 1995

§ 21506. Procedures for evaluating need to mark wires and supporting structures; requests for marking; report of evaluation criteria

(a) It is the intent of the Legislature in enacting this section to provide a procedure to evaluate criteria used in determining whether wires and supporting structures should be marked.

(b) Any person may request an electrical corporation or a publicly owned electrical utility which serves 250,000 or more customers to mark a wire or supporting structure.

(c) In response to such a request, the utility shall consider the following criteria: the visibility of the wire or supporting structure and the likelihood of aircraft activity at the level of the wire or structure.

(d) The utility shall notify the requester within 90 days of the request whether the wire or supporting structure will be marked.

Attachment II

Members of the Wire Strike Prevention Task Force

- Southern California Edison (SCE)
- Pacific Gas and Electric Company (PG&E)
- Los Angeles Department of Water and Power (LADWP)
- San Diego Gas and Electric Company (SDG&E)
- Sacramento Municipal Utility District (SMUD)
- Helicopter Association International (HAI)
- Federal Aviation Administration (FAA)
- California Department of Transportation, Aeronautics Program
- Aircraft Owners and Pilots Association (AOPA)
- US Marine Corps (MAG 39)
- California Air National Guard
- California Army National Guard
- Western Area Power Administration (WAPA)
- Professional Helicopter Pilots Association (PHPA)
- Imperial County Sheriff's Department
- California Highway Patrol (CHP)
- California Department of Forestry and Fire Protection (CDF)
- Los Angeles Police Department (LAPD)
- US Forest Service (USFS)
- Los Angeles County Sheriff's Department
- San Bernardino County Sheriff's Department
- Soaring Society of America
- Burbank Police Department
- City of Los Angeles, Department of General Services
- Aris Helicopter Ltd.
- Clark Helicopters
- Frontier Agricultural Service
- Rogers Helicopter

Benchmark/Historical Perspective

Helicopter Wire Strikes

Prepared for:

Pacific Gas & Electric Company
San Francisico, CA 94106

Prepared by:

FLIGHT SAFETY INSTITUTE
SACRAMENTO, CA 95816

WHAT WE WANT TO KNOW

- EFFECTIVE MARKING CRITERIA & SITE ASSESSMENT
  - Foreseeability of Low Helicopter in Area
  - Object's Visibility
  - Hazard Assessment Methodology

- PRIORITY AND METHOD OF MARKING SELECTED WIRES/STRUCTURES
  - Prioritizing Considerations
  - Alternative Marking Systems

WHAT WE WANT TO DO

- DEVELOP MODEL WIRE STRIKE REDUCTION PROGRAM
  - Supported by Utility Industry
  - Supported by Helicopter Community
  - Supported by Government

- COORDINATED EFFORT INVOLVING ALL INTERESTS

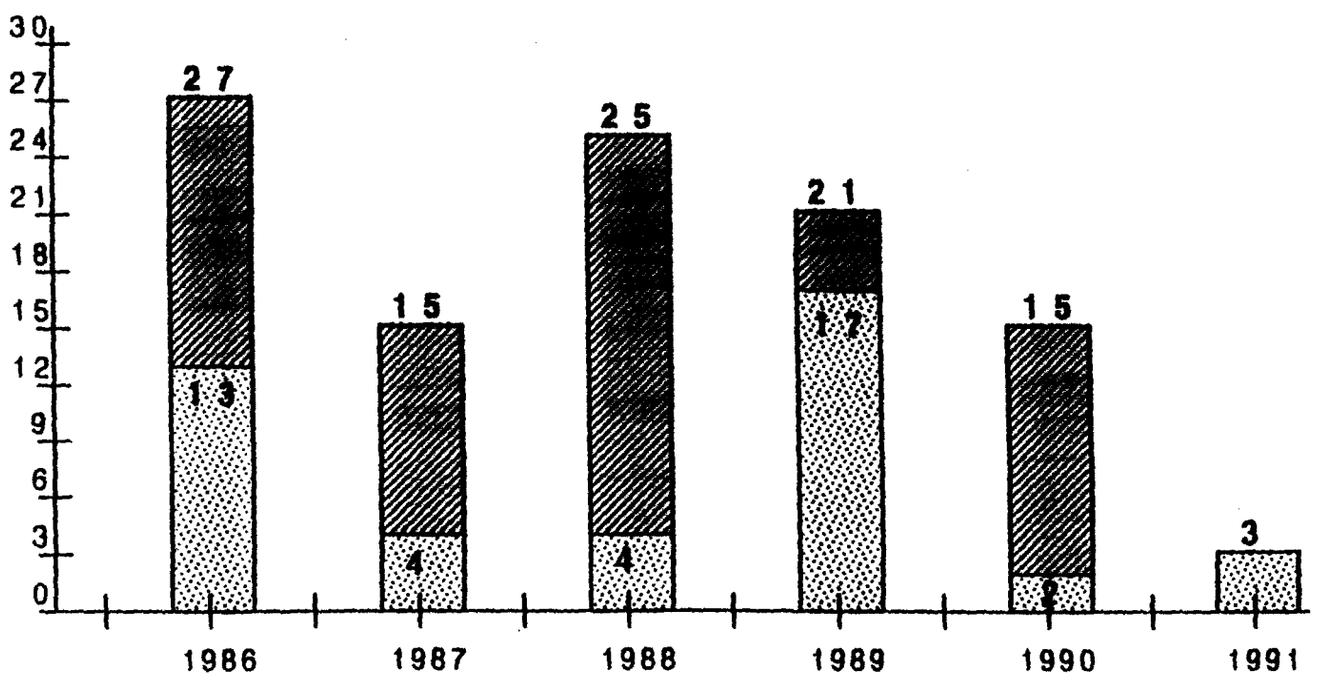
- ON-GOING PROGRAM

- PROGRAM MODEL FOR OTHER STATES/REGIONS

WHAT WE KNOW

Magnitude of Helicopter Wire Strike Losses

Fatalities and Injuries



SOURCE: NTSB accident and incident records for all civil helicopter wire strikes

WHAT WE KNOW

Magnitude of Helicoper Wire Strike Losses

Reporting Vagaries

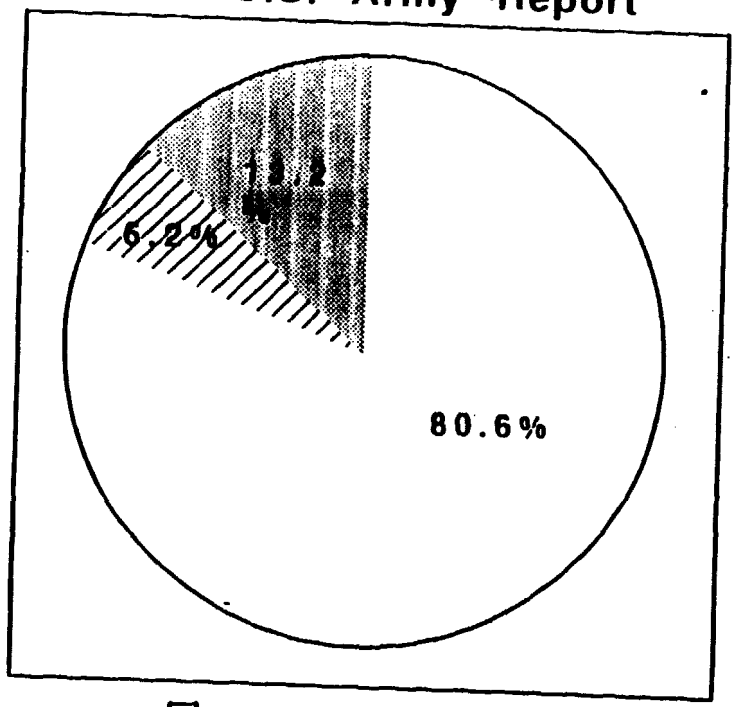
- NASA's 1980 study of 208 civil helicopter wire strike accidents occurring between 1970-79 reported that "a qualitative estimate is that the sample data reported here represents less than 10% of all wire strikes."

- Cal Trans' 1978 Report on aircraft wire strikes noted that between 1966 and 1975, 216 wire strike contacts within California were reported to NTSB while PG&E and Southern California Edison records identified 1,232 wire strikes.

- Wire strikes involving public aircraft are not reported to NTSB or FAA.

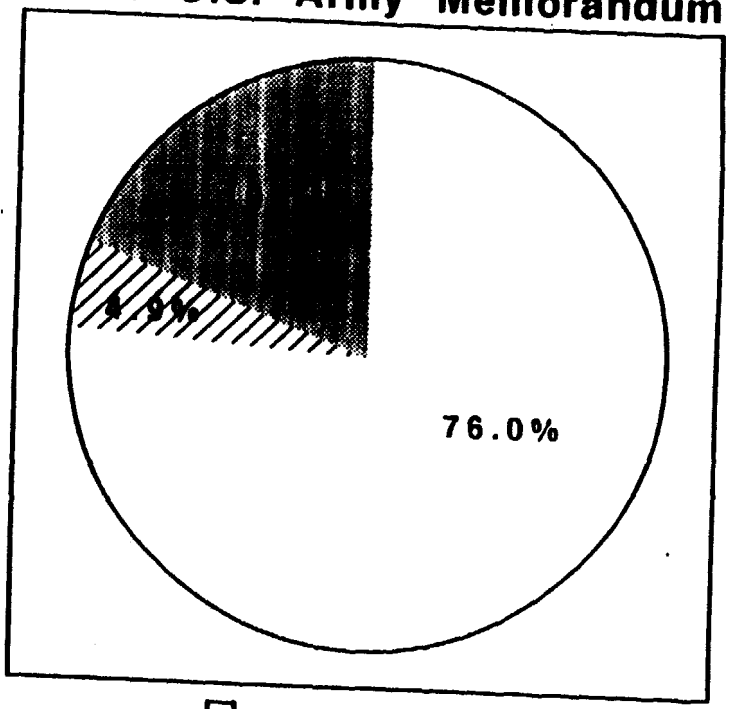
- NTSB regulations do not require that all wire strike "incidents" be reported.

1971 U.S. Army Report



- Day
- Dusk/Dawn
- Night

1986 U.S. Army Memorandum



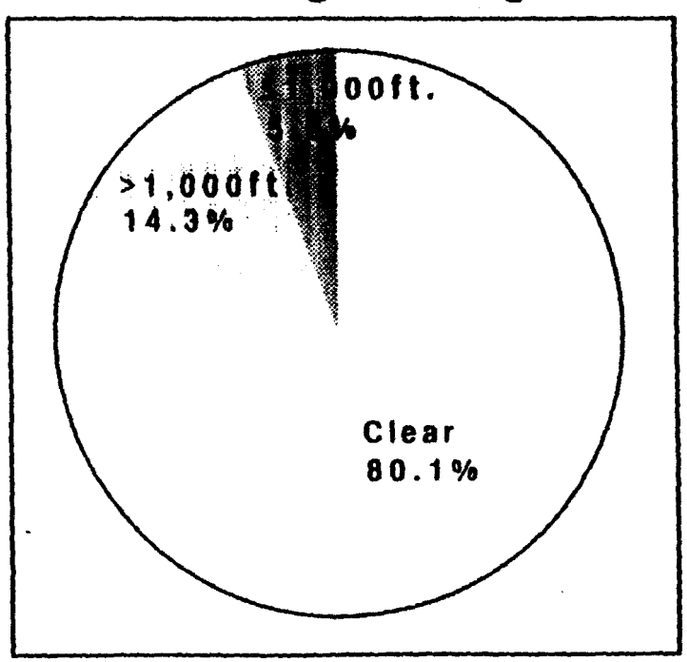
- Day
- Dusk/Dawn
- Night

WHAT WE KNOW

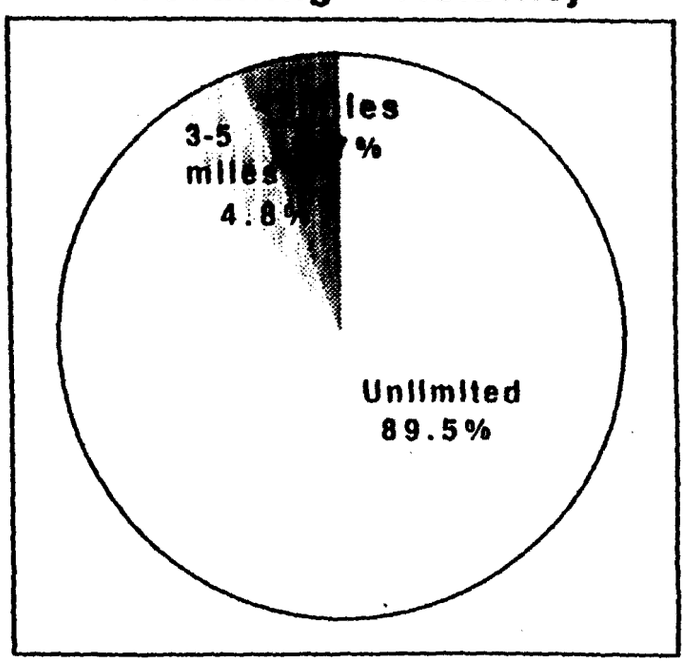
Wire Strike Conditions

Weather Considerations

Prevailing Ceiling



Prevailing Visibility

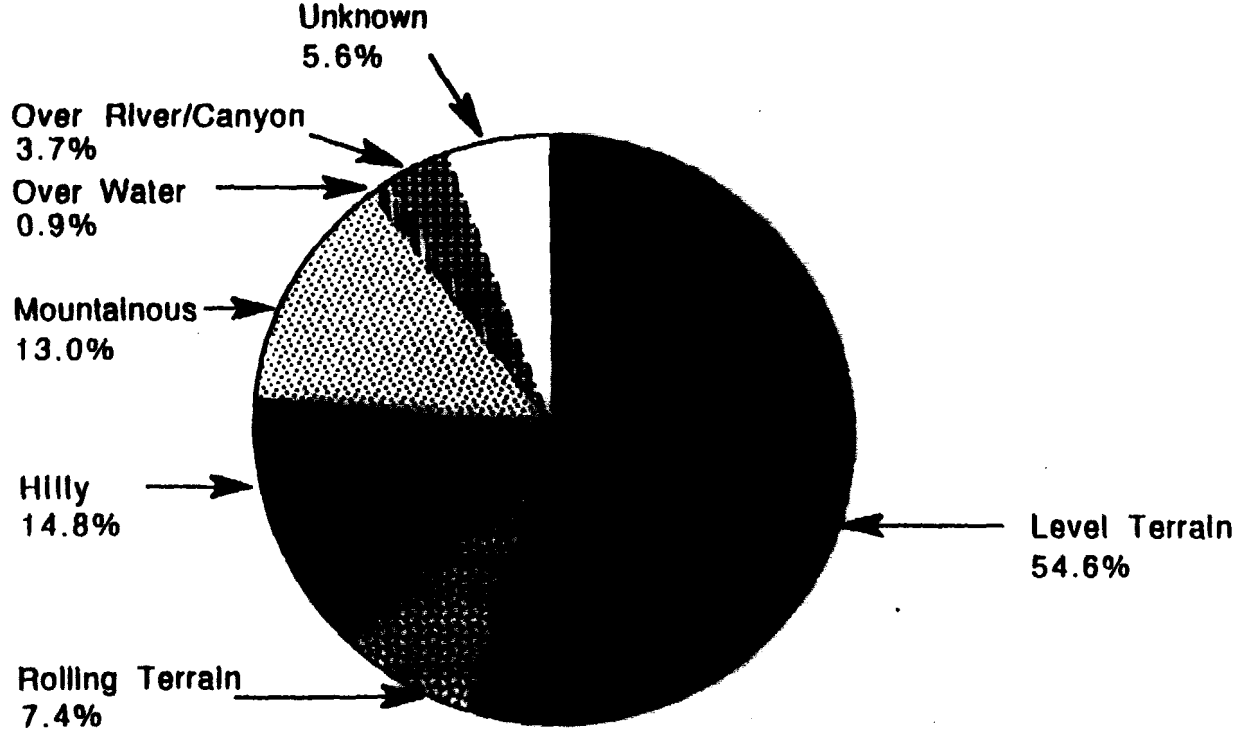


SOURCE: NASA Civil Helicopter Wire Strike Assessment Study, 1980
(excludes aerial application operations).

WHAT WE KNOW

Wire Strike Conditions

Geographical Setting



SOURCE: NASA Civil Helicopter Wire Strike Assessment Study, 1980
(excludes aerial application operators).